

SEQUENCE LISTING

<110> Tosato, Giovanna et al.

<120> Use of Calreticulin and Calretuculin Fragments to
Inhibi Endothelial Cell Growth and Angiogenesis, and
Suppress Tumor Growth

<130> 4239 53372

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<141> 1999-10-05

<150> US 60/103,438

<151> 1998-10-06

<160> 35

<170> PatentIn Ver. 2.0

<210> 1

<211> 1251

<212> DNA

<213> Homo sapiens

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<221> CDS

<222> (1)..(1251)

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gcc	gag	cct	gcc	gtc	tac	ttc	aag	gag	cag	ttt	ctg	gac	gga	gac	ggg	96
Ala	Glu	Pro	Ala	Val	Tyr	Phe	Lys	Glu	Gln	Phe	Leu	Asp	Gly	Asp	Gly	
			20					25					30			

tgg	act	tcc	cgc	tgg	atc	gaa	tcc	aaa	cac	aag	tca	gat	ttt	ggc	aaa	144
Trp	Thr	Ser	Arg	Trp	Ile	Glu	Ser	Lys	His	Lys	Ser	Asp	Phe	Gly	Lys	
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ttc	gtt	ctc	agt	tcc	ggc	aag	ttc	tac	ggt	gac	gag	gag	aaa	gat	aaa	192
Phe	Val	Leu	Ser	Ser	Gly	Lys	Phe	Tyr	Gly	Asp	Glu	Glu	Lys	Asp	Lys	
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ggt	ttg	cag	aca	agc	cag	gat	gca	cgc	ttt	tat	gct	ctg	tcg	gcc	agt	240
Gly	Leu	Gln	Thr	Ser	Gln	Asp	Ala	Arg	Phe	Tyr	Ala	Leu	Ser	Ala	Ser	
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Phe	Glu	Pro	Phe	Ser	Asn	Lys	Gly	Gln	Thr	Leu	Val	Val	Gln	Phe	Thr	
				85				90						95		

gtg	aaa	cat	gag	cag	aac	atc	gac	tgt	ggg	ggc	ggc	tat	gtg	aag	ctg	336
Val	Lys	His	Glu	Gln	Asn	Ile	Asp	Cys	Gly	Gly	Gly	Tyr	Val	Lys	Leu	
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Phe Pro Asn Ser Leu Asp Gln Thr Asp Met His Gly Asp Ser Glu Tyr	
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aac atc atg ttt ggt ccc gac atc tgt ggc cct ggc acc aag aag gtt	432
Asn Ile Met Phe Gly Pro Asp Ile Cys Gly Pro Gly Thr Lys Lys Val	
130 135 140	
cat gtc atc ttc aac tac aag ggc aag aac gtg ctg atc aac aag gac	480
His Val Ile Phe Asn Tyr Lys Gly Lys Asn Val Leu Ile Asn Lys Asp	
145 150 155 160	
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Ile Arg Cys Lys Asp Asp Glu Phe Thr His Leu Tyr Thr Leu Ile Val	
165 170 175	
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Arg Pro Asp Asn Thr Tyr Glu Val Lys Ile Asp Asn Ser Gln Val Glu	
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Ser Gly Ser Leu Glu Asp Asp Trp Asp Phe Leu Pro Pro Lys Lys Ile	
195 200 205	
aag gat cct gat gct tca aaa ccg gaa gac tgg gat gag cgg gcc aag	672
Lys Asp Pro Asp Ala Ser Lys Pro Glu Asp Trp Asp Glu Arg Ala Lys	
210 215 220	
atc gat gat ccc aca gac tcc aag cct gag gac tgg gac aag ccc gag	720
Ile Asp Asp Pro Thr Asp Ser Lys Pro Glu Asp Trp Asp Lys Pro Glu	
225 230 235 240	
cat atc cct gac cct gat gct aag aag ccc gag gac tgg gat gaa gag	768
His Ile Pro Asp Pro Asp Ala Lys Lys Pro Glu Asp Trp Asp Glu Glu	
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atg gac gga gag tgg gaa ccc cca gtg att cag aac cct gag tac aag	816
Met Asp Gly Glu Trp Glu Pro Pro Val Ile Gln Asn Pro Glu Tyr Lys	
260 265 270	
ggt gag tgg aag ccc cgg cag atc gac aac cca gat tac aag ggc act	864
Gly Glu Trp Lys Pro Arg Gln Ile Asp Asn Pro Asp Tyr Lys Gly Thr	
275 280 285	
tgg atc cac cca gaa att gac aac ccc gag tat tct ccc gat ccc agt	912
Trp Ile His Pro Glu Ile Asp Asn Pro Glu Tyr Ser Pro Asp Pro Ser	
290 295 300	
atc tat gcc tat gat aac ttt ggc gtg ctg ggc ctg gac ctc tgg cag	960
Ile Tyr Ala Tyr Asp Asn Phe Gly Val Leu Gly Leu Asp Leu Trp Gln	
305 310 315 320	
gtc aag tct ggc acc atc ttt gac aac ttc ctc atc acc aac gat gag	1008
Val Lys Ser Gly Thr Ile Phe Asp Asn Phe Leu Ile Thr Asn Asp Glu	
325 330 335	

gca tac gct gag gag ttt ggc aac gag acg tgg ggc gta aca aag gca	1056
Ala Tyr Ala Glu Glu Phe Gly Asn Glu Thr Trp Gly Val Thr Lys Ala	
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gca gag aaa caa atg aag gac aaa cag gac gag gag cag agg ctt aag	1104
Ala Glu Lys Gln Met Lys Asp Lys Gln Asp Glu Glu Gln Arg Leu Lys	
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gag gag gaa gaa gac aag aaa cgc aaa gag gag gag gag gca gag gac	1152
Glu Glu Glu Glu Asp Lys Lys Arg Lys Glu Glu Glu Glu Ala Glu Asp	
370 375 380	
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Lys Glu Asp Asp Glu Asp Lys Asp Glu Asp Glu Glu Asp Glu Glu Asp	
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aag gag gaa gat gag gag gaa gat gtc ccc ggc cag gcc aag gac gag	1248
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Trp Thr Ser Arg Trp Ile Glu Ser Lys His Lys Ser Asp Phe Gly Lys	
35 40 45	
Phe Val Leu Ser Ser Gly Lys Phe Tyr Gly Asp Glu Glu Lys Asp Lys	
50 55 60	
Gly Leu Gln Thr Ser Gln Asp Ala Arg Phe Tyr Ala Leu Ser Ala Ser	
65 70 75 80	
Phe Glu Pro Phe Ser Asn Lys Gly Gln Thr Leu Val Val Gln Phe Thr	
85 90 95	
Val Lys His Glu Gln Asn Ile Asp Cys Gly Gly Gly Tyr Val Lys Leu	
100 105 110	
Phe Pro Asn Ser Leu Asp Gln Thr Asp Met His Gly Asp Ser Glu Tyr	
115 120 125	
Asn Ile Met Phe Gly Pro Asp Ile Cys Gly Pro Gly Thr Lys Lys Val	
130 135 140	

His Val Ile Phe Asn Tyr Lys Gly Lys Asn Val Leu Ile Asn Lys Asp
145 150 155 160

Ile Arg Cys Lys Asp Asp Glu Phe Thr His Leu Tyr Thr Leu Ile Val
165 170 175

Arg Pro Asp Asn Thr Tyr Glu Val Lys Ile Asp Asn Ser Gln Val Glu
180 185 190

Ser Gly Ser Leu Glu Asp Asp Trp Asp Phe Leu Pro Pro Lys Lys Ile
195 200 205

Lys Asp Pro Asp Ala Ser Lys Pro Glu Asp Trp Asp Glu Arg Ala Lys
210 215 220

Ile Asp Asp Pro Thr Asp Ser Lys Pro Glu Asp Trp Asp Lys Pro Glu
225 230 235 240

His Ile Pro Asp Pro Asp Ala Lys Lys Pro Glu Asp Trp Asp Glu Glu
245 250 255

Met Asp Gly Glu Trp Glu Pro Pro Val Ile Gln Asn Pro Glu Tyr Lys
260 265 270

Gly Glu Trp Lys Pro Arg Gln Ile Asp Asn Pro Asp Tyr Lys Gly Thr
275 280 285

Trp Ile His Pro Glu Ile Asp Asn Pro Glu Tyr Ser Pro Asp Pro Ser
290 295 300

Ile Tyr Ala Tyr Asp Asn Phe Gly Val Leu Gly Leu Asp Leu Trp Gln
305 310 315 320

Val Lys Ser Gly Thr Ile Phe Asp Asn Phe Leu Ile Thr Asn Asp Glu
325 330 335

Ala Tyr Ala Glu Glu Phe Gly Asn Glu Thr Trp Gly Val Thr Lys Ala
340 345 350

Ala Glu Lys Gln Met Lys Asp Lys Gln Asp Glu Glu Gln Arg Leu Lys
355 360 365

Glu Glu Glu Glu Asp Lys Lys Arg Lys Glu Glu Glu Glu Ala Glu Asp
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Lys Glu Glu Asp Glu Glu Glu Asp Val Pro Gly Gln Ala Lys Asp Glu
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Leu

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Val	Leu	Ser	Ser	Gly	Lys	Phe	Tyr	Gly	Asp	Glu	Glu	Lys	Asp	Lys	Gly	35	40	45	
Leu	Gln	Thr	Ser	Gln	Asp	Ala	Arg	Phe	Tyr	Ala	Leu	Ser	Ala	Ser	Phe	50	55	60	
Glu	Pro	Phe	Ser	Asn	Lys	Gly	Gln	Thr	Leu	Val	Val	Gln	Phe	Thr	Val	65	70	75	80
Lys	His	Glu	Gln	Asn	Ile	Asp	Cys	Gly	Gly	Gly	Tyr	Val	Lys	Leu	Phe	85	90	95	
Pro	Asn	Ser	Leu	Asp	Gln	Thr	Asp	Met	His	Gly	Asp	Ser	Glu	Tyr	Asn	100	105	110	
Ile	Met	Phe	Gly	Pro	Asp	Ile	Cys	Gly	Pro	Gly	Thr	Lys	Lys	Val	His	115	120	125	
Val	Ile	Phe	Asn	Tyr	Lys	Gly	Lys	Asn	Val	Leu	Ile	Asn	Lys	Asp	Ile	130	135	140	
Arg	Cys	Lys	Asp	Asp	Glu	Phe	Thr	His	Leu	Tyr	Thr	Leu	Ile	Val	Arg	145	150	155	160
Pro	Asp	Asn	Thr	Tyr	Glu	Val	Lys	Ile	Asp	Asn	Ser	Gln	Val	Glu	Ser	165	170	175	
Gly	Ser	Leu	Glu	Asp	Asp	Trp	Asp	Phe	Leu	Pro	Pro	Lys	Lys	Ile	Lys	180	185	190	
Asp	Pro	Asp	Ala	Ser	Lys	Pro	Glu	Asp	Trp	Asp	Glu	Arg	Ala	Lys	Ile	195	200	205	
Asp	Asp	Pro	Thr	Asp	Ser	Lys	Pro	Glu	Asp	Trp	Asp	Lys	Pro	Glu	His	210	215	220	
Ile	Pro	Asp	Pro	Asp	Ala	Lys	Lys	Pro	Glu	Asp	Trp	Asp	Glu	Glu	Met	225	230	235	240
Asp	Gly	Glu	Trp	Glu	Pro	Pro	Val	Ile	Gln	Asn	Pro	Glu	Tyr	Lys	Gly	245	250	255	
Glu	Trp	Lys	Pro	Arg	Gln	Ile	Asp	Asn	Pro	Asp	Tyr	Lys	Gly	Thr	Trp	260	265	270	
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Tyr Ala Tyr Asp Asn Phe Gly Val Leu Gly Leu Asp Leu Trp Gln Val
290 295 300

Lys Ser Gly Thr Ile Phe Asp Asn Phe Leu Ile Thr Asn Asp Glu Ala
305 310 315 320

Tyr Ala Glu Glu Phe Gly Asn Glu Thr Trp Gly Val Thr Lys Ala Ala
325 330 335

Glu Lys Gln Met Lys Asp Lys Gln Asp Glu Glu Gln Arg Leu Lys Glu
340 345 350

Glu Glu Glu Asp Lys Lys Arg Lys Glu Glu Glu Glu Ala Glu Asp Lys
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<212> PRT

<213> Homo sapiens

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35 40 45

Leu Gln Thr Ser Gln Asp Ala Arg Phe Tyr Ala Leu Ser Ala Ser Phe
50 55 60

Glu Pro Phe Ser Asn Lys Gly Gln Thr Leu Val Val Gln Phe Thr Val
65 70 75 80

Lys His Glu Gln Asn Ile Asp Cys Gly Gly Gly Tyr Val Lys Leu Phe
85 90 95

Pro Asn Ser Leu Asp Gln Thr Asp Met His Gly Asp Ser Glu Tyr Asn
100 105 110

Ile Met Phe Gly Pro Asp Ile Cys Gly Pro Gly Thr Lys Lys Val His
115 120 125

Val Ile Phe Asn Tyr Lys Gly Lys Asn Val Leu Ile Asn Lys Asp Ile

130

135

140

Arg Cys Lys Asp Asp Glu Phe Thr His Leu Tyr Thr Leu Ile Val Arg
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Lys Ile Asp Asn Ser Gln Val Glu Ser Gly Ser Leu Glu
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<213> Homo sapiens

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Thr Tyr Glu Val Lys Ile Asp Asn Ser Gln Val Glu Ser Gly Ser Leu
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<210> 7

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<222> (109)..(1362)

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Met Leu Leu
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tcc gtg ccg ttg ctg ctc ggc ctc ctc ggc ctg gcc gtc gcc gag cct 165
Ser Val Pro Leu Leu Leu Gly Leu Leu Gly Leu Ala Val Ala Glu Pro
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gcc gtc tac ttc aag gag cag ttt ctg gac gga gac ggg tgg act tcc 213
Ala Val Tyr Phe Lys Glu Gln Phe Leu Asp Gly Asp Gly Trp Thr Ser
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cgc tgg atc gaa tcc aaa cac aag tca gat ttt ggc aaa ttc gtt ctc 261
Arg Trp Ile Glu Ser Lys His Lys Ser Asp Phe Gly Lys Phe Val Leu
40 45 50

agt tcc ggc aag ttc tac ggt gac gag gag aaa gat aaa ggt ttg cag 309
Ser Ser Gly Lys Phe Tyr Gly Asp Glu Glu Lys Asp Lys Gly Leu Gln
55 60 65

aca agc cag gat gca cgc ttt tat gct ctg tgc gcc agt ttc gag cct 357
Thr Ser Gln Asp Ala Arg Phe Tyr Ala Leu Ser Ala Ser Phe Glu Pro
70 75 80

ttc agc aac aaa ggc cag acg ctg gtg gtg cag ttc acg gtg aaa cat 405
Phe Ser Asn Lys Gly Gln Thr Leu Val Val Gln Phe Thr Val Lys His
85 90 95

gag cag aac atc gac tgt ggg ggc ggc tat gtg aag ctg ttt cct aat 453
Glu Gln Asn Ile Asp Cys Gly Gly Gly Tyr Val Lys Leu Phe Pro Asn
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Ser Leu Asp Gln Thr Asp Met His Gly Asp Ser Glu Tyr Asn Ile Met
120 125 130

ttt ggt ccc gac atc tgt ggc cct ggc acc aag aag gtt cat gtc atc 549
Phe Gly Pro Asp Ile Cys Gly Pro Gly Thr Lys Lys Val His Val Ile
135 140 145

ttc aac tac aag ggc aag aac gtg ctg atc aac aag gac atc cgt tgc 597
Phe Asn Tyr Lys Gly Lys Asn Val Leu Ile Asn Lys Asp Ile Arg Cys
150 155 160

aag gat gat gag ttt aca cac ctg tac aca ctg att gtg cgg cca gac 645
Lys Asp Asp Glu Phe Thr His Leu Tyr Thr Leu Ile Val Arg Pro Asp
165 170 175

aac acc tat gag gtg aag att gac aac agc cag gtg gag tcc ggc tcc 693
Asn Thr Tyr Glu Val Lys Ile Asp Asn Ser Gln Val Glu Ser Gly Ser
180 185 190 195

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215 220 225	
ccc aca gac tcc aag cct gag gac tgg gac aag ccc gag cat atc cct	837
Pro Thr Asp Ser Lys Pro Glu Asp Trp Asp Lys Pro Glu His Ile Pro	
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Asp Pro Asp Ala Lys Lys Pro Glu Asp Trp Asp Glu Glu Met Asp Gly	
245 250 255	
gag tgg gaa ccc cca gtg att cag aac cct gag tac aag ggt gag tgg	933
Glu Trp Glu Pro Pro Val Ile Gln Asn Pro Glu Tyr Lys Gly Glu Trp	
260 265 270 275	
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Lys Pro Arg Gln Ile Asp Asn Pro Asp Tyr Lys Gly Thr Trp Ile His	
280 285 290	
cca gaa att gac aac ccc gag tat tct ccc gat ccc agt atc tat gcc	1029
Pro Glu Ile Asp Asn Pro Glu Tyr Ser Pro Asp Pro Ser Ile Tyr Ala	
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Tyr Asp Asn Phe Gly Val Leu Gly Leu Asp Leu Trp Gln Val Lys Ser	
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Gly Thr Ile Phe Asp Asn Phe Leu Ile Thr Asn Asp Glu Ala Tyr Ala	
325 330 335	
gag gag ttt ggc aac gag acg tgg ggc gta aca aag gca gca gag aaa	1173
Glu Glu Phe Gly Asn Glu Thr Trp Gly Val Thr Lys Ala Ala Glu Lys	
340 345 350 355	
caa atg aag gac aaa cag gac gag gag cag agg ctt aag gag gag gaa	1221
Gln Met Lys Asp Lys Gln Asp Glu Glu Gln Arg Leu Lys Glu Glu Glu	
360 365 370	
gaa gac aag aaa cgc aaa gag gag gag gag gca gag gac aag gag gat	1269
Glu Asp Lys Lys Arg Lys Glu Glu Glu Glu Ala Glu Asp Lys Glu Asp	
375 380 385	
gat gag gac aaa gat gag gat gag gag gat gag gag gac aag gag gaa	1317
Asp Glu Asp Lys Asp Glu Asp Glu Glu Asp Glu Glu Asp Lys Glu Glu	
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Asp Glu Glu Glu Asp Val Pro Gly Gln Ala Lys Asp Glu Leu	
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Ile Asp Asn Ser Gln Val Glu Ser Gly Ser Leu Glu
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35 40 45
Ile Asp Asn Ser Gln Val Glu Ser Gly Ser Leu Glu Asp Asp Trp Asp
50 55 60

Phe Leu Pro Pro Lys Lys Ile Lys Asp Pro Asp Ala Ser Lys Pro Glu
 65 70 75 80
 Asp Trp Asp Glu Arg Ala Lys Ile Asp Asp Pro Thr Asp Ser Lys Pro
 85 90 95
 Glu Asp Trp Asp Lys Pro Glu His Ile Pro Asp Pro Asp Ala Lys Lys
 100 105 110
 Pro Glu Asp Trp Asp Glu Glu Met Asp Gly Glu Trp Glu Pro Pro Val
 115 120 125
 Ile Gln Asn Pro Glu Tyr Lys Gly Glu Trp Lys Pro Arg Gln Ile Asp
 130 135 140
 Asn Pro Asp Tyr Lys Gly Thr Trp Ile His Pro Glu Ile Asp Asn Pro
 145 150 155 160
 Glu Tyr Ser Pro Asp Pro Ser Ile Tyr Ala Tyr Asp Asn Phe Gly Val
 165 170 175
 Leu Gly Leu Asp Leu Trp Gln Val Lys Ser Gly Thr Ile Phe Asp Asn
 180 185 190
 Phe Leu Ile Thr Asn Asp Glu Ala Tyr Ala Glu Glu Phe Gly Asn Glu
 195 200 205
 Thr Trp Gly Val Thr Lys Ala Ala Glu Lys Gln Met Lys Asp Lys Gln
 210 215 220
 Asp Glu Glu Gln Arg Leu Lys Glu Glu Glu Glu Asp Lys Lys Arg Lys
 225 230 235 240
 Glu Glu Glu Glu Ala Glu Asp Lys Glu Asp Asp Glu Asp Lys Asp Glu
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 260 265 270
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<213> Artificial Sequence

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<223> Xaa represents I, L, G, C, or A

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<223> Description of Artificial Sequence:Consensus
 integrin sequence

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<223> Xaa represents G, V, or A

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<223> Xaa represents K or R

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<223> Description of Artificial Sequence:Consensus
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<223> Description of Artificial Sequence:Portion of
integrin sequence

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 1 5

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<223> Description of Artificial Sequence:Portion of
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<223> Description of Artificial Sequence:Portion of
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<210> 20

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<223> Description of Artificial Sequence:Portion of
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<210> 21

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<223> Description of Artificial Sequence:Portion of
steroid nuclear receptor

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[illegible]

<223> Description of Artificial Sequence:Portion of steroid nuclear receptor

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1 5 10 15

<213> Artificial Sequence

<223> Description of Artificial Sequence:Portion of steroid nuclear receptor

Ser Cys Glu Gly Cys Lys Ala Phe Phe Lys Arg Ser Ile Gln Gly
1 5 10 15

<213> Artificial Sequence

<223> Description of Artificial Sequence:Portion of steroid nuclear receptor

Ser Cys Glu Gly Cys Lys Gly Phe Phe Lys Arg Thr Val Arg Lys
1 5 10 15

<213> Artificial Sequence

<223> Description of Artificial Sequence:Portion of steroid nuclear receptor

Thr Cys Glu Gly Cys Thr Gly Phe Phe Lys Arg Ser Ile Arg Lys
1 5 10 15

<213> Artificial Sequence

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<223> Description of Artificial Sequence:Portion of
steroid nuclear receptor

<400> 30

Thr Cys Glu Gly Cys Lys Gly Phe Phe Lys Arg Thr Val Gln Lys
1 5 10 15

<210> 31

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Portion of
steroid nuclear receptor

<400> 31

Ser Cys Glu Gly Cys Lys Gly Phe Phe Lys Arg Thr Val Arg Lys
1 5 10 15

<210> 32

<211> 6

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Portion of
glucocorticoid receptor

<400> 32

Lys Val Phe Phe Lys Arg
1 5

<210> 33

<211> 6

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Portion of
estrogen receptor

<400> 33

Lys Ala Phe Phe Lys Arg
1 5

<210> 34

<211> 6

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence:Portion of
thyroid receptor

<400> 34

Lys Ser Phe Phe Arg Arg
1 5

<210> 35

<211> 6

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Portion of
retinoic acid receptor

<400> 35

Lys Gly Phe Phe Arg Arg
1 5

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